

### **ABSTRACT OF DISCLOSURE**

The present invention relates to a facilitated transport membrane for separation of alkene hydrocarbons from hydrocarbon mixtures, comprising a porous support and a solid polymer electrolyte consisting of a transition metal salt and a polymer having phthalic structure, in which the electrolyte is in solid state at its operating temperature. The facilitated transport membrane is prepared by forming a solid polymer electrolyte consisting of a transition metal salt and a polymer on a porous support. The transition metal salt can selectively and reversibly form a complex with alkene hydrocarbons and the polymer can dissociate the transition metal salt. In particular, the polymer matrix allows the transition metal salt to be well dissociated because it has a phthalic structure capable of being coordinated to a transition metal ion.